**IT Applications Unit 3, AOS 1, Online Communities**

Complete the following, from pgs, 14-18: **Network communication standards**

**Networks are classified according to below and we will study the following:**

1. **Network Categories: LAN, WAN**
2. **Network Architecture, client-server; peer-to-peer; internet peer-to-peer; intranet**
3. **Network communication standards**
4. **Network hardware and software**
5. **Transmission media**
6. **Network security**

**Network communication standards**

1. Why are network standards required?

Network standards are required to enable compatibility between products and that hence any combination of products will work together

1. What is a protocol?

A protocol is a standard that defines how two computers or devices on a network transmit data. For example it includes;

* The type of error checking used
* The data compression method, if one is used
* How the sending device will indicate that it has finished sending a message
* How the receiving device will indicate that it has received a message

Common protocols include Ethernet, TCP/IP (transmission control protocol/ Internet Protocol), POP (Post Office Protocol) ect

1. What is the OSI?

OSI (Open Systems Interconnection) is a standard for network communications that defines a model for using protocols in seven layers where each layer can only use the functionality of the one under it.

**Ethernet**

1. Describe the nature of Ethernet.

Ethernet is a standard used to describe communication over a single cable shared by all devices on the network.

1. What are frames?

Frames are known as the short messages that are communicated between the nodes, these frames contain packets of information.

1. Identify the 4 components of all Ethernet frames.

Ethernet frames contain 4 main components that are in all frames, these are destination node address, the sending nodes address, some data and parity information (a 1 or 0 based if odd or not)

1. Fig. 1-9 on p 17 lists the Ethernet type, cable type, maximum length and transfer rate for Ethernet transmissions. The College typically uses 100BaseTX, Cat 5 or10Gbase-T. What are their respective maximum lengths and transfer rates?

|  |  |  |
| --- | --- | --- |
| Ethernet type/cable type | Max length | Max transfer rate |
| 100Base-TX/two twisted pair | 85m | 100Mbps |
| Cat 5 | 85m | 100Mbps (or 10 Gbps if Cat5e) |
| 10Gbase-T/two twisted pairs | 85m | 10Gbps |

**TCP/IP**

1. Describe the nature of TCP/IP.

TCP/IP or Transmission Control Protocol/ Internet Protocol is actually 2 different protocols rolled into the one and is the most common method of packaging data for network transmission these days and hence is the protocol on which the internet is based.

1. TCP/IP uses smaller packets than other protocols. Why is this an advantage on the internet?

The advantage of TCP/IP on the internet using smaller packets is based that as there is multiple paths the data can take to reduce load congestion on networks hence small packets help balance route congestion.

**802.11 wireless standard**

**1** What does this standard do?

The 802.11 standard defines how two devices can communicate using radio waves, when used the network is called a Wi-fi (Wireless Fidelity) network.

2 What is a Wi-Fi network?

A Wi-fi network is simply a network using the 802.11 standard and are connecting devices upto 50m apart without wires

3 Different wireless standards transmit at different frequencies. What is the advantage of the newer 802.11n standard?

The main advantage of the newer 802.11n standard is that it can operate at 2.4GHz or 5GHz hence minimise the chance of interference from other 802.11 devices or non-802.11 devices likewise a higher transfer rate is achievable.